Unit 6: Mind

a. action of thinking, or occurrence of a thought;
b. the organ of the human brain.

(1) Is it possible to understand the human mind and brain?
(2) Science, power, and control.
How do scientists get knowledge of natural phenomena?
How does the brain work?

Hydraulics
Vibrations
Electricity
Neuron Theory:

Brain as a Network of Cells
Hermann Helmholtz
Animal Heat, Vitalism, and Perpetual Motion

“The animal body therefore does not differ from the steam-engine as regards the manner in which it obtains heat and force”

Berlin Physical Society, 1845
“there are no force in organisms other than physicochemical forces”
Helmholtz, 1850s:
Organic Physics
Experimental Neurophysiology

E.g. Nerve impulse:
27 m / sec
Wilhelm Wundt
(Studied with Helmholtz)
Psychology Laboratory
Leipzig, 1878
Wundt trained:

G. Stanley Hall
(Hopkins 1883, Clark 1889)

Hugo Munsterberg
(Harvard 1893)

Freud, 1909, at Clark University
Munsterberg, 1893: A “mental laboratory”

- Perception
- Reaction Time
- Memory
- Associations
- “Laws of Thought”
Munsterberg and Freud
Brain vs. the Unconscious
Munsterberg, 1893:

A science of the brain, a basis for social policy

measurements of elementary acts. To-day we know scarcely a single realm of the mental life into which with rich success experiment does not dare to go. Who shall set the limit? To show the significance of the experimental method for the highest and most complicated phenomena of mental life, has come to be to-day exactly the goal of our labors. In the series of scientific investi-
Cranium Size and Intelligence?

- Caucasian: 87
- English: 96
- Greek: 84
- Chinese, African: 82
- Australian: 75
Alfred Binet and the Binet-Simon Test
**PSYCHOLOGICAL EXAMINING IN THE UNITED STATES ARMY**

**TEST 8**

Notice the sample sentence:

**People hear with the eyes ears nose mouth**

The correct word is **ears**, because it makes the truest sentence.

In each of the sentences below you have four choices for the last word. Only one of them is correct. In each sentence draw a line under the one of these four words which makes the truest sentence. If you can not be sure, guess. The two samples are already marked as they should be.

**SAMPLES**

<table>
<thead>
<tr>
<th>People hear with the eyes ears nose mouth</th>
</tr>
</thead>
<tbody>
<tr>
<td>France is in <strong>Europe</strong> Asia Africa Australia</td>
</tr>
</tbody>
</table>

1. America was discovered by Drake Hudson Columbus Cabot.
2. Pincushion is played with **rackets cards pins dice**.
3. The most prominent industry of Detroit is automobiles brewing flour packing.
4. The Wyandotte is a kind of **horse fowl cattle granite**.
5. The U.S. School for Army Officers is at Annapolis West Point New I.
6. Food products are made by **Smith & Wesson Swift & Co. W. L. D**.
7. Bud Fisher is famous as an actor author baseball player.
8. The Guernsey is a kind of **horse goat sheep cow**.
9. Marguerite Clark is known as a suffragist singer.
10. “Hasn’t scratched yet” is used in advertising a **dress deejays cleaner**.
11. Salsify is a kind of snake fish lizard.
12. Coral is obtained from mines elephant.
13. Rosa Bonheur is famous as a poet sculptor.
14. The tuna is a kind of **fish bird**.
15. Emeralds are usually **red blue**.
16. Maize is a kind of **corn**.
17. Nabisco is a **patent food product tooth paste**.
18. Velvet Joe is a brand of tooth powder dry goods tobacco soap.
19. Cypress is a kind of **food tree fabric**.
20. Bana and **Egypt India Japan**.
21. A kind of **typewriter multigraph phonograph adding machine**.
22. The **abdomen head shoulder neck**.
23. The name of a **fabric drink dance food**.
24. The **Battle of Gettysburg was fought in 1863 1813 1778 1812**.
25. The basoon is used in **music stenography book-binding lithography**.
26. Turpentine comes from petroleum ore hides **trees**.
27. The number of a Zulu's legs is **two four six eight**.
28. The **simulant is a kind of musket cannon pistol sword**.
29. The Knight engine is used in the Packard Lozier **Stearns Pierce Arrow**.
30. The author of The Raven is Stevenson Kipling Hawthorne Poe.
31. Spade is a kind used in **bowling football tennis hockey**.
32. A six-sided figure is called a **scholium parallelogram hexagon trapezium**.
33. Isaac Pitman was most famous in physics **shorthand railroading electricity**.
34. The amperes used in measuring wind power **electricity water power rain fall**.
35. The Overland car is made in **Buffalo Detroit Flint Toledo**.
36. Mauve is the name of a **drink color fabric food**.
37. The stanchion is used in **fishing hunting farming motoring**.
38. Mica is a **vegetable mineral gas liquid**.
39. Scrooge appears in **Vanity Fair The Christmas Carol Romola Henry IV**.

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47.3% “feeble-minded”

“We must learn to measure skillfully every form and aspect of behavior which has psychological and sociological significance.”

-- Robert Yerkes
Electroencephalograms (1930s)

Image of EEG results removed due to copyright restrictions.
Wilder Penfield (1940s),
Intra-operative brain recording

Illustrations associating areas of the brain with different parts of the body removed due to copyright restrictions.
Advances in Brain Imaging: CT and MRI (1970s-1990s)

Images from a CT and MRI removed due to copyright restrictions.
Functional Neuroimaging (1990s-2000s)

PET Scan
fMRI

Where is:
Memory?
Consciousness?
Schizophrenia?
Free Will?
The Soul?

Image from an fMRI removed due to copyright restrictions.